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of the teeth of the elder defunct at so advanced an age, is a sure proof that he had never enjoyed "the blessings of civilization." (These *crania* are now deposited in the Museum of the College of Surgeons.)

It is so rare to meet with the actual memorials of personages named, ever so incidentally in Roman history, that have escaped "The Goth, the Christian, Time, War, Flood, and Fire," that this marble may justly be reckoned amongst the most interesting relics of antiquity that have come down to our times. As the monument of a great scholar, who enjoyed so high a reputation in the brightest days of literature, no more fitting shrine for its preservation could have been found than the library of Trinity College, where the *Manes* of the ancient Professor will, after so many centuries of oblivion, hear his name and fame once more echoed by thousands of voices—and be (let us hope) propitious to the depositor who has thus carried out the last desire of the tormented ghost :

"Rinfresca la memoria mia che giace."

Obituary Notice of Ferdinand Vandevere Hayden, M.D., Ph.D., LL.D.

By Prof. J. P. Lesley.

(Read before the American Philosophical Society, January 20, 1888.)

Dr. Hayden was born in Westfield, Mass., September 7, 1829; was graduated from Oberlin College, Ohio, in 1850; and received a diploma from the Albany Medical College in 1853. Under the orders of Prof. James Hall of Albany, he went with Mr. F. B. Meek to collect Cretaceous and Tertiary fossils in the White River Bad Lands. In 1854-5 he explored the upper Missouri river region, mainly at his own expense, aided by the American Fur Company; following the Missouri river to Fort Benton, and the Yellowstone to the mouth of the Big Horn. His collections of fossils were sent partly to the Academy of Natural Sciences in St. Louis, and partly to the Academy of Natural Sciences in Philadelphia. In 1856 he made a summary report of the whole region which he had explored to Lieutenant Warren, U.S.T.E., and immediately began a general reconnaissance of the North-west as geologist on Warren's staff. This survey extended to 1859. The next three years, to 1862, he explored the Yellowstone and Missouri rivers as naturalist and surgeon to Captain Reynolds' expedition. The Civil War having broken out, Dr. Hayden, in May, 1862, was appointed Acting Assistant Surgeon of Volunteers and placed in charge, first of Satterlee Hospital in Philadelphia, and then (February, 1863, as full Surgeon of Volunteers) of Beaufort, South Carolina. February,

1864, he became chief medical officer of the army in the Shenandoah valley, at Winchester, Va. May, 1865, he was breveted Lieutenant Colonel, and resigned his medical duties for work at the Smithsonian Institution.

In 1865 he was elected Professor of Geology and Mineralogy in the University of Pennsylvania, resigning his chair in 1872 on account of his western explorations; for, in 1866 he explored a second time the Bad Lands of Dakota, collecting largely vertebrate fossils for the Academy of Natural Sciences of Philadelphia. From 1867 to 1879, twelve years, he was United States Geologist in charge of the survey of the Territories. From 1879 to 1883 he was employed as Assistant Geologist of the United States Geological Survey in preparing for publication his surveys in the Territories. Relieved of this literary work in the Spring of 1883, he did field work in Montana until he resigned his position, in the Autumn of 1886, his health having become so impaired that he was confined for the most of the time to his bed. He died December 22, 1887.

Dr. Hayden never practiced medicine, but used his medical knowledge in the superintendence of the army hospitals. He received the title of LL.D. from the University of Rochester in 1876, and again from the University of Pennsylvania in 1886. He was elected a member of the National Academy of Sciences in March, 1856; of the American Philosophical Society in July, 1860; and of many other societies in America and in Europe.

His fame as a geologist in Europe was extraordinary. It is not too much to say that his name was more familiar to the geological world in Europe than that of any other American geologist. This was evident to those of his collaborators in the science who visited the foreign cities, or were in correspondence with foreign geologists. It was due to the exceptional number of his geological contributions, to the freshness of the fields which he explored, and to the untiring energy with which he published his observations as fast as they were made, and communicated them, in large editions, to all the working geologists abroad. The amount of Hayden literature (as it may be justly called) in every library of the world is surprisingly great. More than fifty octavo volumes, copiously illustrated with pictures, sections, topographical and colored maps, were published by him, to make known his territorial surveys from 1867 to 1879. His report on the Warren survey was published by the War Department; and in papers read before the Academy of Natural Sciences of Philadelphia, in 1857 and 1858, and in the Transactions of the American Philosophical Society of Philadelphia, in 1862, describing not only the geology, but the living vertebrates, reptiles, fresh-water fish and shells of the region. Another paper in the Transactions of our Society (of the same date) made contributions to the ethnography and philology of the Indian tribes of the Missouri river. The same year he published a sketch of the Mandan language in the *American Journal of Science*; and in 1869 notes on the Pawnee, Winnebago and Omaha languages in the Transactions of our Society. His second survey of the Bad Lands produced a memoir for the Academy of Natural Sciences of Philadelphia, in 1869.

Dr. Hayden will be remembered as one of the great discoverers of the world in the history of the science of geology. He will be recognized as a man who really opened a new world in the far West to intelligent curiosity and detailed exploration. His influence in educating the western population of the United States was as great as that of Agassiz, in inspiring the population of the eastern States with an enthusiastic admiration for natural history. The two men cannot be compared; for their personalities, their scientific objects, and their methods of research were in strong contrast. Each was an acknowledged leader in his special realm. There was the same indescribable power exercised over a great number of minds. Whatever Agassiz asked for in New England was immediately granted, and with enthusiasm. Whatever Hayden asked for from the people, the politicians, and the Governors of the new States and Territories was allowed to be useful and desirable, and the means placed at his disposal. He represented in science the curiosity, the intelligence, the energy, the practical business talent of the western people. In a few years they came to adopt him as their favorite son of science. He exactly met the wants of the Great West. There was a vehemence and a sort of wildness in his nature as a man which won him success, coöperation, and enthusiastic reputation among all classes, high and low, wherever he went. In the wigwam, in the cabin and in the court-house he was equally at home, and entirely one with the people. He popularized geology on the grandest scale in the new States and Territories. He easily and naturally affiliated with every kind of explorer; acting with such friendliness and manly justice towards those whom he employed as his co-workers that they pursued with hearty zeal the development of his plans.

In dealing with the public men of the country he was so frank, forcible and direct that it was impossible to suppress or resist him. He had the western people at his back so heartily and unanimously that he was for a long time master of the scientific situation at Washington. He was a warm personal friend of some of the highest officials of the Government, who never failed to support strenuously and successfully his surveys. I think that no one who knows the history of geology in the United States can fail to recognize the fact that the present magnificent United States Geological Survey, now under the direction of Major Powell, is the legitimate child of Dr. Hayden's territorial surveys.

Dr. Hayden first conceived the idea of setting aside for national use, as a perpetual park, the region of the Yellowstone geysers. This idea he urged with such success upon Congress, that a law prepared under his direction was passed to that effect. Such a notion would probably have not occurred to the mind of a geologist occupied with the purely scientific details of a new country; and it illustrates excellently well the practical turn of his character.